PENNSYLVANIA RAILROAD, SAFE HARBOR BRIDGE HAER No. PA-531
(Philadelphia, Baltimore & Washington Railroad, Safe Harbor Bridga)
Pennsylvania Historic Railroad Bridges Recording Project
Spanning mouth of Conestoga River
Safa Harbor
Lancaster County
Pennsylvania

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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PENNSYLVANIA RAILROAD, SAFE HARBOR BRIDGE
(Philadelphia, Baltimore & Washington Railroad, Safe Harbor Bridge)

HAER No. PA-531

Location:	Spanning mouth of Conestoga River, Safe Harbor, Lancaster County, Pennsylvania.
USGS Quadrangle:	Safe Harbor, Pennsylvania (7.5-minute series).
UTM Coordinates:	18/381685/4420165
Date of Construction:	1905.
Basis for Dating:	Secondary sources.
Date of Alteration:	Circa 1930.
Designer:	William H. Brown (Chief Engineer, Pennsylvania Railroad).
Fabricator:	Pennsylvania Steel Co. (Steelton, Pa.).
Builder:	H. S. Kerbaugh, Inc.
Present Owner:	Norfolk Southern Railroad.
Present Use:	Railroad bridge.
Structure Type:	Riveted deck girder; pin-connected Pratt deck truss.
Significance:	The Safe Harbor bridge is an unusual two-level structure built to carry two different Pennsylvania Railroad branches. The low-grade freight line on the upper level was chief engineer William H. Brown's last major project before retirement.
Historian:	Justin M. Spivey, April 2000.
Project Information:	The Historic American Engineering Record (HAER) conducted the Pennsylvania Historic Railroad Bridges Recording Project during 1999 and 2000, under the direction of Eric N. DeLony, Chief. The project was supported by the Consolidated Rail Corporation (Conrail) and a grant from the Pennsylvania Historical and

Museum Commission (PHMC). Justin M. Spivey, HAER engineer, researched and wrote the final reports. Preston M. Thayer, historian, Fredericksburg, Virginia, conducted preliminary research under contract. Jet Lowe, HAER photographer, and Joseph E. B. Elliott, contract photographer, Sellersville, Pennsylvania, produced large-format photographs.

Description and History

In 1902, the Pennsylvania Railroad (PRR) made plans to build a new low-grade freight line across Lancaster County, a decision motivated by steep grades on its four-track main line between Philadelphia and Harrisburg. Called the Atglen & Susquehanna Branch (A&S), or simply the Low Grade, it diverged from the main line at Parkesburg and passed south of Lancaster, through Quarryville and Martic Forge, to Shenk's Ferry on the Susquehanna River. The A&S then paralleled the existing Columbia & Port Deposit Branch (C&PD) of the Philadelphia, Baltimore & Washington Railroad (a PRR subsidiary) along the river's east bank. At Shock's Mills it crossed the Susquehanna on a new stone arch bridge and proceeded along the west bank to rejoin the main line at Marysville. Construction of the line, which consumed "over three and a half years, $19.5 million, and reportedly more than 200 lives," is a story in itself, amply covered by historian Frederic H. Abendschein.[1]

The A&S was but one of a number of improvements to freight operations in eastern Pennsylvania during the administration of PRR President Alexander J. Cassatt. Other items proposed by Cassatt in 1902 included grade reduction on the Trenton Cut-Off and construction of the Philadelphia & Thorndale Branch, the completion of which provided a continuous freight bypass around Philadelphia.[2] The 1902 plan left a gap of about ten miles from Thorndale to Parkesburg, between which freight trains shared the main line with passenger traffic. Although the gap was never closed, the Philadelphia bypass and the A&S together constitute initial segments of "a low grade route stretching from the eastern seaboard to the midwest," a vision which Abendschein attributed to former PRR President J. Edgar Thomson, who served from 1852 to 1874.[3]

Construction on the A&S began with the Shock's Mills bridge in late 1902. As work proceeded, a 1904 flood turned over the six-span stone arch bridge that carried the C&PD tracks over the Conestoga River.[4] Rather than rebuild this bridge, PRR evidently decided to incorporate its replacement into a new bridge for the A&S. As the two lines travel south from Columbia, the C&PD descends to follow the river while the A&S ascends in preparation for its turn to the east. (Where the lines diverge at Shenk's Ferry, these two lines are 150'-0" apart in elevation.) The new Conestoga River bridge was therefore designed with two levels, with the C&PD's two tracks at 55'-0" above the 1905 river level, and A&S's two tracks 92'-0" higher and 96'-0" to the east.[5] The C&PD spans, riveted deck plate girders 98'-6", 98'-0", and 98'-6 long, comprise the entire 295'-0" length of the lower level.[6] At the upper level, the A&S spans include not only a 300'-0" pin-connected Pratt deck truss over the river, but also plate-girder viaducts on steel trestle bents,

nine spans totaling 480'-0" on the north approach, and seventeen spans totaling 780'-0" on the north. The high stone piers supporting the 300'-0" truss are monolithic with the lower level abutments.[7]

PRR's wholly-owned subsidiary, Pennsylvania Steel Co. of Steelton, fabricated all of the steel work, which was erected by the contractor on this section, H. S. Kerbaugh, Inc., during 1905. Construction photographs show that the high stone piers and falsework for the 300'-0" truss were built concurrently. During this time, the C&PD used a temporary wooden trestle off to one side. Erection first began on the 300'-0" truss, aided by a traveler. Shortly thereafter, additional traveling cranes were employed for the north and south approach viaducts, working from the abutments toward the river. Almost all of the high-level erection had been completed before crews began work on the low-level girders.[8] The A&S opened to traffic in July 1906, and the C&PD, which had suffered numerous diversions and interruptions during construction, returned to regular service that August.[9]

Construction of the Safe Harbor Dam in the 1930s raised the river's level considerably, prompting PRR to raise the C&PD grade. Maintenance records indicate that Belmont Iron Works raised the lower spans 4'-0" and installed reinforced concrete bridge seats. While the former C&PD continues to see freight traffic, then-owner Conrail removed tracks from the upper level in 1990, after abandoning this portion of the former A&S.

Notes

1. Frederic H. Abendschein, "The Atglen & Susquehanna: Lancaster County's Low Grade," *Journal of the Lancaster County Historical Society* 95, No. 1 (Winter 1993): 2-19. This article also appears in *Keystone* 27, No. 3 (Winter 1994): 10-25, with substantially more photographs.

2. Howard W. Schotter, *The Growth and Development of the Pennsylvania Railroad Company: A Review of the Charter and Annual Reports of the Pennsylvania Railroad Company 1846 to 1926* (Philadelphia: Press of Allen, Lane, and Scott, 1927), 281-2.

3. Abendschein, "The Atglen & Susquehanna," 3.

4. "The Low Grade Freight Cut-Off of the Pennsylvania R. R. — II," *Engineering Record* 52, No. 26 (23 Dec. 1905): 707-10.

5. "The Low Grade Freight Cut-Off of the Pennsylvania R. R. — I," *Engineering Record* 52, No. 25 (16 Dec. 1905): 674-7.

6. Pennsylvania Railroad, "C. and P. D. Bridge at Safe Harbor over Conestoga Creek, Col. and Port Deposit R. R. — Md. Div. — P. B. & W. R. R.," dated Jun. 1905; and Pennsylvania Steel Co., "97 ft. 8 in. Girders, C. & P. D. Bridge at Safe Harbor over Conestoga Creek, Col. & Port Deposit R. R. Md. Div., P. B. & W. R. R.," dated 30 Jun. 1905; both milepost 33.06, region/division/branch 131322, aperture card files, Consolidated Rail Corp., Philadelphia, Pa. [transferred to Norfolk Southern Railway Co., Atlanta Ga.; hereinafter cited as Conrail aperture cards].

7. Pennsylvania Railroad, "Masonry Plan of Bridge over Conestoga Creek at Safe Harbor for Columbia and Port Deposit Ry., Maryland Div., P. B. & W. R. R., and High Piers for Atglen and Susquehanna Br., Phila. Div., P. R. R.," dated 15 Jun. 1905, Conrail aperture cards.

8. For construction photographs, see negatives K002759, K002861, K002864, K002874, and K002893, Benjamin F. G. Kline, Jr., Collection, Railroad Museum of Pennsylvania, Pennsylvania Historical and Museum Commission, Strasburg, Pa. See also "Photographs on the Operation of H. S. Kerbaugh, Inc., at Safe Harbor, Pa., 1905," album in Costello Collection, Railroad Museum of Pennsylvania, MG 199, Pennsylvania State Archives, Harrisburg, Pa.

9. Philadelphia, Baltimore & Washington Railroad Company, *Fourth Annual Report for the Year 1906* (Philadelphia: Press of Allen, Lane & Scott, 1907), 20.

Acknowledgment

The author is grateful to John W. W. Loose, Historian at the Lancaster County Historical Society, for responding to a preliminary survey form.

Additional Sources

1. "Pennsylvania Low-Grade Line Down the Susquehanna," *Railroad Gazette* 36, No. 11 (11 Mar. 1904): 180-2.

2. "The Pennsylvania Railroad Low Grade Freight Line from Harrisburg to Atglen, Pa.," *Engineering News* 54, No. 26 (28 Dec. 1905): 677-80.